of the shop engine and its temporary substitute, the intense concentration of considerable power into very small space which the introduction of this engine brought about.

Although in a recent report by the British Commercial Gas Association there is given information as to the weight of steel cylinders for containing gas at pressures at 20, 25, and 120 atmospheres, there is little reason to expect supplies of these containers to be available in any quantity likely to affect the problem; even if they were, these figures show that the storage capacity for the equivalent of 4 gallons of petrol would weigh between 1000 lb. and 2000 lb. (depending on the pressure). So that on dead weight alone they would be at a great disadvantage compared with the atmospheric pressure, or "Beeston," system.

The illustration shows the vehicle which is stated to have been the first to be run on this system. The movement has since spread very rapidly, and reference to the technical Press shows more than a dozen firms making the fabric containers and above a hundred firms offering to fit them.

H. E. Wimperis.

A NATIONAL FOOD POLICY.[1]

The greatest war of all time is slowly but surely having a bound set to its ravages by the limitations of the productive effort of the world's agriculture. The steady drain of man-power, increasing difficulties of transport, and unfavourable climatic conditions have all combined to curtail the world's food supplies, whilst in many countries the spectre of famine begins to loom ominously in the distance. Few nations have fared better in this respect than ours, but our difficulties are steadily increasing, and there is widespread anxiety as to the exact position at the moment and our prospects for the near future. What is our normal margin of safety? How do we stand to-day? How can we best avoid a worse condition? Such are the questions to which all would have an answer, though few realise how difficult it must be to provide. It demands the combined skill of the statistician, the physiologist, and the agricultural expert, and the fortunate combination of these qualities in his person thus confers upon the estimates and conclusions of Prof. Wood a title to consideration which probably none other could claim.

The report of the Food (War) Committee of the Royal Society (Command Paper, Cd. 8421) has previously indicated that our pre-war average food consumption, as measured by its work-producing power, was about 15 per cent. above the level commonly accepted by physiologists as adequate for the maintenance of complete efficiency. In view of the increased proportion of the population now engaged in strenuous work, this margin would doubtless be no more than 5 to 10 per cent. to-day, even were supplies of food no less. The report further showed the predominating position of cereals and meat in the national dietary. Cereals alone contribute more than one-third of the work-producing power of the diet of the average "man," whilst in the diet of the manual labourer the proportion will often be nearer two-thirds. Bread and meat together account for more than one-half of the work-producing power of the nation as a whole.

If our margin of possibility in food economy is but this 5 to 10 per cent., it is obvious that our war food policy must embrace more than an anti-waste campaign, urgently desirable though that may be. The main problem is to secure the bread supply. Unfortunately, the two most obvious solutions, increased importation and greater home production of wheat, are not easy of attainment and become progressively more difficult as the war continues. It does not seem likely that the utmost effort in these directions will produce any very considerable immediate result. Prof. Wood sees a more practicable solution in the diversion of large quantities of bread-corn and other foodstuffs from animals and industry to human consumption. Of our pre-war annual supply of seventeen million tons of grain of all kinds, little more than five millions served directly for human food, whilst animals consumed above nine millions, the rest going for seed, for brewing, distilling, and other industries. Basing his argument upon the fundamental wastefulness in times of scarcity of the conversion of bread-corn into meat, as illustrated by the fact that the most efficient of meat-producing animals, the pig, produces no more than 1 lb. of dry human food for 12 lb. of dry grain consumed, and after reviewing carefully the significance of each of the cereals for animal feeding, Prof. Wood concludes that fully three and a half million tons of cereals might be transferred from animal fodder to human food, with a resultant net gain of two and three-quarter million tons of dry human food, and a reduction in the necessary import of grain for the year 1917–18 of three million tons below the pre-war figure.

After a detailed estimate of the fodder of all kinds likely to be available for live stock, Prof. Wood concludes that, broadly speaking, despite the diversion of fodder suggested, it will be possible to maintain our live stock, but it will not be possible to produce so large a total output of growth, meat, milk, and work. Full provision for work and milk must, however, be regarded as indispensable, so that the brunt of the shortage must be borne by the meat-producing stock. Pigs and poultry are the most economical converters of fodder into animal food, but, unfortunately, their diet consists largely of grain or grain products which can no longer be spared. Sheep are fairly economical food-producers, consume mainly grass, hay, and roots, and produce wool as well as food, so that they may certainly be encouraged. Beef production, however, as normally carried on, is a very wasteful process, owing partly to the slowness with which ordinary cattle mature, and partly to the extreme to which the fattening process is commonly carried. By extending the use

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[1] "The National Food Supply in Peace and War." By Prof. T. B. Wood. Pp. 43. (Cambridge University Press.) Price 6*d*. net.

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of early maturing breeds and killing off at an earlier stage of fattening than has been customary, the result will be a great economy in concentrated feeding-stuffs, and such a reduction of the head of cattle can be effected as will equalise the demand for feeding-stuffs and the supply. When the total reduction in live stock becomes such that the normal meat supply can no longer be maintained, recourse must be had to increased importation. Should this step prove necessary, it will obviously save tonnage to import meat rather than fodder.

Agriculturists will find many points for criticism in the details of Prof. Wood's estimates, which are admittedly and of necessity only rough approximations in many particulars, but such criticism can scarcely shake the soundness of his general conclusions.

Too much importance cannot be attached to Prof. Wood's appeal for a careful examination of the results of the methods which have been used in Germany for carrying out a policy framed on similar lines, so that we may avoid the mistakes which have been in a great measure the cause of the food troubles of Germany. It is suggested that the essential features of a successful policy must comprise, first, the prohibition of the use of sound potatoes and cereals for any purpose other than human food, with certain limited exceptions; secondly, the setting up of maximum prices, rather than fixed prices, for all agricultural commodities, such prices to be fixed in due relation to one another to ensure maximum production of indispensable products; and lastly, the rigid enforcement of such regulations by the infliction of penalties which none could afford to risk. Prof. Wood is to be congratulated on the clearest exposition of the food situation that has yet been submitted to the lay public, and the widest possible circulation of his views is eminently to be desired.

C. C.

UNIVERSITY REPRESENTATION IN PARLIAMENT.

THE provisions of the Franchise Bill as regards the representation of Universities are based on the recommendations of the Speaker's Conference on Electoral Reform, issued early in the present year, under which Oxford and Cambridge retain two members each, London is grouped with Durham, Manchester, Birmingham, Liverpool, Leeds, Sheffield, Bristol, and Wales to form a constituency returning three members, and the Scottish Universities are to form a single constituency returning three members. The degree is to be the basis for electoral qualification. In view of the attacks to which the University franchise has been subject in recent years, this full recognition of the principle of University representation will be gratifying to those who believe that it constitutes a valuable element in our electoral system. As Mr. Balfour said in the House of Commons in July, 1913, the representation of Universities is an honour paid by the country to the cause of higher education, which gives the power of getting into the House of Commons men of science, men of scholarship, men of special and peculiar gifts quite alien from the ordinary working politician. It is, both in theory and practice, a form of proportional representation, enabling men and women of special training and experience to form themselves into constituencies and to return to Parliament representatives qualified to promote higher education and the advancement of science and learning, aspects of our public life which are least likely to secure representation through the ordinary channels.

The recommendations of the Speaker's Conference, while extending the University franchise to the newer Universities, articulate well with the present system of University representation, save in one particular, viz. the proposal to deprive the University of London of the separate representation which it has enjoyed since 1867. NATURE is not concerned with party politics, but there can be no doubt that the reason for this proposal —though no explanation is offered in the report of the Conference—was to form a large University constituency (by grouping London with the newer Universities), which might confidently be expected to return one, or possibly two Liberal members. In the earlier years of its Parliamentary representation London returned three Liberal members —Robert Lowe, Sir John Lubbock, and Sir Michael Foster. At the present time, however, all the University members in Parliament are Conservative or Liberal Unionist, a state of things which is probably responsible for the proposed adjustment. It is most unfortunate, however, that for party reasons the University of London should be victimised by being deprived of its right of separate representation, and this at a time when thousands of its graduates on active service are unable to make their influence felt on the question. If the principle of grouping is sound, it should have been applied to Oxford and Cambridge, which not only retain separate representation, but are also to return two members each.

On the basis of the number of their graduates, neither Oxford nor Cambridge has a stronger claim for two members than London. To secure the representation of the smaller Universities some method of grouping is inevitable; but the result of joining London, with its roll of graduates many times longer than that of any of the other Universities of the group, will be to form an unwieldy and heterogeneous constituency, dominated by the London vote.

The *Times Educational Supplement* has suggested in a leading article that, "had the history of the University [of London] been less chequered, it may be that it would have retained separate representation." Those who know anything about the University of London will be disposed to think, on the contrary, that the University would be held in higher respect if its history had been *more* chequered, if it could show more of the scars of battle against ignorance and obscurantism. However that may be, the English system is to build on tradition, and to preserve principles and institutions which, as

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